

**Federal State-funded Institution of Higher Education
THE RUSSIAN PRESIDENTIAL ACADEMY OF NATIONAL
ECONOMY AND PUBLIC ADMINISTRATION**

Manuscript Copyright



ABDURAKHMANOV MANSUR ILGAR OGLU

**EXPECTATIONS AND COMMUNICATIONS IN THE SYSTEM
OF MONETARY POLICY TOOLS OF THE BANK OF RUSSIA**

Specialty 5.2.4. Finance

ABSTRACT
of the dissertation for the degree
of PhD in Economics

PhD supervisor:
Khandruev Alexander Andreevich,
Head of the Department of Finance,
Money Circulation and Credit,
Doctor of Economic Sciences,
Professor

Moscow, 2024

Relevance of the research topic

Monetary policy (MP) in many countries has shifted to managing the expectations of economic agents, market participants. Central banks seek to influence macroeconomic performance and monetary conditions not only through the adjustment of the interest rate, but also through statements, signals or forecasts of future MP. This suggests that there are new factors in the formation of interest rates in the modern economy. A number of developed country central banks upon Zero Lower Bound (ZLB) resort to the use of unconventional MP tools to stimulate aggregate demand. There is a noticeable tendency a partial transition by central banks of emerging market countries to the use of unconventional MP tools in order to strengthen the impact on economic processes through other channels of the monetary policy transmission mechanism (TM). The role of the expectations channel of the MP TM is increasing. For the effective functioning of this channel it is necessary to improve the communication policy, to build confidence in the conducted MP.

The system of MP tools often needs to be transformed due to changing conditions, which determines the main directions of the research, which are primarily related to expectations in the securities market. Market expectations are reflected in yield curves, forward interest rates. The transformation of approaches in the conduct of MP is explained by the fact that central banks perform a wide range of functions related to mega-regulation, ensuring price and financial stability. With the help of MP tools, the central bank seeks to achieve its objectives quickly and efficiently, maintaining a healthy economy and smooth functioning of the banking system. The relevance is also supported by the innovative policies currently being pursued by central banks in different countries. New realities and contradictions that they face in international and domestic markets, development of other TM channels, make them reconsider their approaches to conducting MP, search for new tools and make adjustments to the existing ones.

The experience of the last ten years (especially the crises of 2014-2015, 2020, 2022-2023) has shown the high importance of the Bank of Russia's actions and the speed of decision-making under the pressure on the economy due to the introduction of large-scale sanctions and restrictive measures. The Central Bank had to use almost all the tools at its disposal, including intentions in the MP and unconventional measures, to stabilize the situation in the Russian economy and achieve the fixed objectives.

The degree of scientific development of the problem

In the foreign economic literature, there is already a large number of studies devoted to the relationship between the intentions in the conducted MP and the expectations of agents and market participants. The domestic literature does not have a similar degree of coverage due to the fact that the Bank of Russia does not use unconventional tools of MP in pure form. The limited degree of development is manifested in respect of such aspects of the research as: expediency of application of

unconventional tools of MP in countries with emerging markets, practice of communications, its impact on monetary conditions, practice of forming market expectations without violating confidence in the one conducted by MP.

Significant contribution to the economic literature related to the practice of using MP tools was made by Adrian T., Acharya V., Ajello A., Bernanke B.S., Moessner R., Sutherland C.S., Swanson E., Woodford M., Drobyshevsky S., Moiseev S., Trunin P., Sinelnikova-Muryleva E. and others. The role of MP tools in ensuring price and financial stability was studied by Acharya V., Adrian T., Ajello A., Bauer M., Boissay F., Cairo I., Collard F., Cúrdia V., Goldberg J., Greenwood R., Grimm M., Jimenez G., Kashyap A., Schularick M., Siebert C., Stein J. and others.

The expectations of market participants and how central banks' communication policies, including statements, signals and forecasts, affect macroeconomic and financial performance have been addressed by Ajello A., Bergstrom K., Bernanke B.S., Bongard M., Binder C., Campbell J.R., Coibion O., Ferreira L., Galati G., Gorodnichenko O., Gürkaynak R.S., Hattori M., Hubert P., Karagedikli O., Leombroni M., Moessner R., Nelson W., Sutherland C.S., Svensson L., Swanson E., Weber M., Zlobins A., et al. A definite and significant contribution to the domestic literature in this area was made by Evstigneeva A., Kartaev F., Styurin K., Trunin P. In the works of authors investigating the relationship between market expectations, decisions and statements of central banks, various econometric models (different specifications of linear regressions, vector autoregressions) and research methods are used.

The purpose and objectives of the study

The purpose of the study is both to identify the relationship between decisions on the key rate, forecasts of its trajectory and market expectations on the basis of the current practice of statements of intent in conducting MP, and to assess the prospects for expanding the range of MP tools by the Bank of Russia and improving the expectations management process.

In order to achieve the set goal, the following tasks were outlined and consistently solved:

- 1) to systematize the tools of MP of central banks, to make up their modern classification taking into account the peculiarities of developed countries;
- 2) to identify the role of MP tools in ensuring price and financial stability;
- 3) to build a model for assessing the reaction of Russian' market participants to the decisions and forecasts of the Bank of Russia, which can be used for analysis by the monetary authorities;
- 4) to determine how accurate are the intentions in the conducted MP (accuracy of forecasts) and how accurate are the market expectations with regard to these intentions (predictability of decisions);
- 5) to develop recommendations to improve the management of market expectations;

6) assess the feasibility and prospects of transition to the use of unconventional tools in the conduct of MP by the Bank of Russia.

Object and subject of the study

The object of the study is financial, monetary conditions and macroeconomic processes arising in the conduct of MP.

The subject of the study is the system of MP tools, in particular, communication and interest rate policy in this system.

Theoretical significance of the study

Theoretical significance of the study is determined by the comprehensive approach to the consideration of MP tools used by central banks at present and consists in the development of modern theory of MP and its tools by determining the role of expectations, communications, transparency and trust in conducting MP, the importance of taking into account the risks to financial stability when making decisions. This approach can be used for training in monetary, banking. Generalization of scientific researches revealed that communications and system of statements of intentions on MP (Forward Guidance, FG) can influence long-term rates in the economy and inflation expectations, which is necessary for the Russian economy. The paper reveals that the key rate forecasts corresponding to the signals affect so far only short- and medium-term yields of Russian government bonds.

Practical significance of the study

The practical significance of the study lies in the possibility of application and current implementation by the monetary authorities (in particular, the monetary policy department of the Bank of Russia, which evaluates the effectiveness of tools and prepares proposals for their improvement) of practical recommendations on the development of communications and management of economic agents' expectations in the mechanism of accompaniment of MP decisions of the Bank of Russia. Recommendations on decision-making on the key rate in the conditions of shocks and crisis phenomena in the economy can be used by the Bank of Russia (in particular, by the Monetary Policy Department and the Financial Stability Department of the Bank of Russia) in the mechanism of decision-making on MP. Most of the recommendations outlined in the thesis, as well as in the responses to the conducted Monetary Policy Review, have been implemented in the Bank of Russia's communications practice. Some of the recommendations are planned to be implemented in the practice of communications, while others are in the process of discussion.

The dissertation materials can be used for educational purposes in compiling and developing programs and courses on finance and financial markets, macroeconomics and monetary policy, macroeconomic analysis and modeling at economic specialties.

Research methods

The theoretical and methodological basis of the study is legislative and regulatory legal acts regulating the activities of central banks, works of domestic and foreign researchers in the field of MP and its tools (in particular, communications, expectations and interest rate policy), including reports on monetary policy, monetary policy guidelines, working papers of international organizations and central banks, speeches on advanced international experience.

The study applies general scientific and special research methods. General scientific methods include economic and terminological analysis, comparison, content analysis of literature sources, expert assessments, systematization and analogies, scientific criticism. Special research methods include economic and statistical method and economic and mathematical modeling. The economic-statistical method includes collection and processing of economic statistical data, regression analysis. The paper analyzes cases reflecting the impact of central banks' communications and forecasts on the expectations of economic agents in developed and emerging market countries. Within the framework of economic-mathematical and theoretical modeling, the model formulation and solution are given, and econometric modeling by Bayesian and non-Bayesian methods is performed.

Modeling, calculation of estimates and probabilities are performed in the RStudio environment of the R programming language and in EViews. Data collection, statistical processing, cleaning and other data manipulations, as well as analysis and graphical presentation of data and results are implemented in RStudio and MS Office (Microsoft Excel, Microsoft Word and Microsoft PowerPoint).

The information base of the study consists of open sources of databases of the Federal State Statistics Service of the Russian Federation (Rosstat), the Bank of Russia, LLC «inFOM», Moscow Exchange, National Bureau of Economic Research (NBER), Federal Reserve Economic Data (FRED), U.S. Federal Reserve, Statistical Service of the European Union (Eurostat), European Central Bank (ECB), Bank of Japan, People's Bank of China, Central Bank of the Republic of Turkey, Bank of England and International Monetary Fund (IMF).

Provisions for defense and having scientific novelty

1. Types of the system of statements of intentions in the field of MP (communication policy FG) with regard to the peculiarities of FG policy implementation are singled out and their definitions are given. FG is a unconventional tool of MP. In foreign and domestic literature, including scientific articles, monetary policy reports, working papers and monetary policy guidelines, it is found that the concepts of signals and interest rate forecasts are mixed with the FG tool. Interest rate forecasts and signals compared to the FG tool have a fundamental difference in their use by the central bank that is not noted in literature for a wide range of readers. The study divides the system of MP intentions statements into statements, signals and forecasts that the central bank commits to follow

(Unconventional Forward Guidance, UFG) and statements, signals and forecasts that the central bank does not commit to follow (Conventional Forward Guidance, CFG). Thus, the nature of statements, signals or forecasts can be fundamentally different. If a central bank gives signals about future decisions or forecasts the trajectory of the interest rate, this does not mean that it makes full use of the FG tool. Signals and forecasts should be considered as part of conventional MP, unless the central bank commits to them. In this case, it is incorrect to recognize them as a full-fledged FG tool. The differences listed above are introduced in the developed classification-species scheme as MP tools. As a rule, in the countries whose central banks do not use unconventional monetary policy tools, intentions (statements) concern decision-making on the interest rate, and in the countries whose central banks use unconventional monetary policy tools, intentions concern not only decision-making on the interest rate, but are supplemented by statements regarding the use of Quantitative Easing (QE) or other asset purchase programs to ease monetary conditions prior to their implementation.

2. Based on the systematization of all MP tools (conventional and unconventional), a classification-species scheme of MP tools currently used by central banks has been developed. First, the scheme includes for the first time the intentions of central banks in different forms (with and without obligations). Second, the scheme reflects all unconventional MP tools, which are not fully reflected in the existing literature. Finally, the developed scheme reflects the nature of regulation of economic conditions (conventional and unconventional, market and administrative), as well as the impact on monetary conditions (direct, when the central bank itself conducts operations, and indirect, when it regulates conditions). The scheme is sequentially organized in blocks for conventional and unconventional MP tools, which can be divided, if necessary, to show the breadth and purposes of their application.

3. A binary model of the probability of recession in the Russian economy at the occurrence of yield curve inversion as an indicator of expectations (as a rule, tightening of MP) is constructed, which proves the important role of market expectations. The results of model estimation show a significant impact of yield curve inversion on the occurrence of recession with a lag. Since the formation of yield curve inversion is typically associated with imbalances in financial markets, an additional approach to MP decision-making related to leaning on market expectations during shocks, not previously found in the literature, is proposed. Therefore, the concept of Leaning On the Expectations (LOE) is introduced. The central bank can not only manage the expectations of economic agents, but also lean on their expectations when making decisions on the interest rate. In case of shocks, high uncertainty and in cases when macroeconomic models, Taylor rule or other methods determining the current level of nominal interest rate may not correctly reflect the reality and it is impossible to calibrate or transform them quickly and accurately, the central bank may “leaning on the expectations” of the market (LOE policy) when making decisions on the interest rate and carrying out anti-crisis policy. Leaning on the

expectations implies analyzing and monitoring the yield curve to make quick decisions in order to prevent risks to price and financial stability. Typically, MP tightening is required in the presence of shocks that generate yield curve inversions. If the central bank follows the LOE policy, it will be able to raise the interest rate optimally, based on market expectations, without side effects in order to maintain price and financial stability. At the same time, in periods of shocks, when regulatory easing is not introduced, other risks to financial stability, such as “bank run” in the context of advanced technology, and interest rate risk, may materialize when MP is tightened. Therefore, it is necessary to additionally control other risks, for example, to assess the sensitivity of banking sector portfolios to interest rate risk (as its main carrier). This will prevent the realization of risks under Leaning Against the Wind (LAW) and LOE policies. Thus, when shocks occur, expectations are added to the core of decision-making (macroeconomic forecast, real data and expert discussions), and reliance is added to the decision-making process (vote, explanation of logic and arguments, reduction to consensus) as an argument.

4. The key rate and communication, in particular, the forecast trajectory of the key rate are two major factors in the formation of interest rates in the economy. In this regard, we have developed a model of the impact of the Bank of Russia's decisions on the key rate and forecasts of its trajectory on the expectations of market participants. The model allows us to study the impact of decisions on the key rate and forecasts of its trajectory on monetary conditions and, in particular, on market expectations, the main indicator of which is the yield curve of government bonds. The model is applicable in countries whose central banks do not use unconventional MP tools, as their use can amplify and accelerate the transmission on monetary conditions and macroeconomic performance in the days of interest rate decisions. The model allows analyzing the reaction of market participants to the actions and intentions of the central bank (for example, to which signals or forecasts the market reaction is stronger), as well as other aspects depending on country specifics, liquidity and market development. The results of the model estimation on Russian data show that financial market participants react to the key rate forecasts of the Bank of Russia and the signals that accompany the forecasts. Market participants revise their expectations on certain timeframes on the days when decisions are made and key rate forecasts are published, as in foreign countries. The results show the significance of the impact of key rate decisions and forecasts of its trajectory (up to 2 years) on market participants' expectations (mostly up to 5 years). At the same time, the reaction of market inflation expectations to the decisions of the Bank of Russia on the key rate is significant, but there is no reaction to the future trajectory of the key rate. The results obtained using high-frequency data also show a strong market reaction to unexpected decisions of the Bank of Russia, while there is no significant reaction to the forecasts of the key rate trajectory. The absence of influence of key rate

forecasts on inflation expectations and yields in the long term was found, which allows us to conclude that it is necessary to improve communication practices.

5. The foreign literature mainly estimates the information advantage of the central bank in forecasting economic growth, inflation or unemployment. This paper is the first to estimate the information advantage in forecasting the key rate. To estimate the information advantage in forecasting the key rate, a linear model is developed to include the forecasts of the Bank of Russia and professional analysts, and a segmented (piecewise) linear model is used for this specification. Therefore, to estimate the information advantage in key rate forecasting, a segmented (piecewise) linear model is used for the first time to account for nonlinearity in forecasts. In addition, to assess the information advantage in key rate forecasting, the mean squared errors of forecasts and the signal-to-noise ratio of the Bank of Russia and professional analysts are calculated for the first time in the literature. Two approaches are also used to assess the predictability of the Bank of Russia's key rate decisions. The first one consists in analyzing surveys, forecasts and expectations of professional analysts, based on the results of which calculations of the share of unexpected and expected decisions are made. Within the framework of the second approach, a model of the impact of the Bank of Russia's decisions was developed with the allocation of unexpected decisions on bond prices and volatility of the government bond index yield. The calculations of key rate forecasts errors and the results of estimations of all models specifications (linear and segmented) confirm that the Bank of Russia has an informational advantage in forecasting the key rate. In general, low accuracy of key rate forecasts and weak predictability of the Bank of Russia's decisions were found. Calculations based on surveys, forecasts and expectations of professional analysts show weak predictability of the Bank of Russia's decisions, i.e. low accuracy of market expectations regarding future decisions on the key rate. This is primarily due to the information advantage of the Bank of Russia and the realization of geopolitical risks for the Russian economy in recent years, requiring prompt decisions to prevent risks to price and financial stability. The low accuracy of the Bank of Russia's key rate forecasts and market expectations regarding future key rate decisions is largely due to the adaptation slump in 2022-2023. Weak predictability of actions, low accuracy of forecasts lead to an increased level of uncertainty, volatility in the days of decision-making and publication of key rate forecasts. In order to maintain confidence in MP in case of deviation of key rate forecasts from the actual level, it is necessary to inform the public about non-acceptance of obligations to follow the forecasts, cite factors (decomposition of reasons) and facts of these deviations, which can be taken into account by economic agents and market participants in forming their own expectations. A necessary condition for accelerating the achievement of the inflation target and adjustment of inflation expectations is to improve the predictability of decisions on the key rate and the quality of communication with economic agents and market

participants, including in periods of instability, in order to early adaptation to expected decisions and financial conditions.

6. In order to improve communication practices and tactics and enhance transparency in the conduct of MP, the following recommendations have been developed, which were also reflected in the responses to the questions on the Monetary Policy Review and some of which have already been implemented in the communication practice. First, to avoid contradiction of signals and key rate forecasts in press releases and press conferences on the results of the decision on the key rate, so that the signals adhere to the latest updated forecast range of the key rate. Second, announce the forecast trajectory of the key rate at press conferences in a quantitative format to enhance the accuracy of market participants' interpretation of the signals. Third, improve fuller disclosure of the details of the discussion when making decisions on the key rate, including alternative solutions, arguments in their favor, and minutes of meetings. As part of the disclosure of the details of the discussion, it is proposed to consider the not named publication of the number of votes in favor of a particular decision or the share of those who voted out of the total number of members of the Bank of Russia's Board of Directors. This would allow for a better understanding of the consensus process, the level of uncertainty in decisions, and to correlate expectations with decisions within the "plurality" of votes, i.e. to take into account the reasoning not only within a "single" vote. Finally, to improve the adaptation of communications for different target audiences based on the experience of a number of foreign central banks. An equally important recommendation is to publish the forecast of the key rate trajectory not only at the end of the reference meetings or to confirm the relevance of the previous forecast in the summary. This recommendation rests on three arguments. The first is related to the fact that the study process revealed frequent changes in internal and external conditions that require updating the medium-term macroeconomic forecast. The second one is related to the fact that the forecast trajectory of the key rate is shifted after decision-making in periods of shocks. The third is related to the need to quantitatively duplicate the signals given by the Bank of Russia after each key rate meeting. In addition to improving communication practices, it is important to improve the key rate decision-making process itself, in which the subject of voting should be each reasoned decision in order to avoid groupthink. The measures taken will not only increase the predictability of decisions, but also the transparency of MP for economic agents. In addition to the above recommendations, it is proposed to introduce communications into the system of MP tools of the Bank of Russia, enshrined in Article 35 of Federal Law No. 86-FZ "On the Central Bank of the Russian Federation (Bank of Russia)", since communications, like interest rate policy, affect monetary conditions and are capable of influencing price and financial stability.

7. In order to assess the feasibility and prospects of the Bank of Russia's use of unconventional MP tools, we developed a vector autoregression model with the inclusion of the necessary endogenous

variables using US data to assess the effects of asset purchase programs on macroeconomic performance. The results show that the U.S. Federal Reserve's asset purchase programs (within the framework of QE) and money supply growth lead to an increase in inflation and industrial output. The response of inflation and industrial output is explained by the fact that banks receive liquidity when they sell bonds, which they channel to lend to businesses. Increased lending leads to an increase in business activity due to low interest rates (bond purchases by the U.S. Federal Reserve eases monetary conditions). Additionally, an inflation forecast is compiled using Russian data, which shows a persistently high inflation rate over the forecast horizon. Thus, for the first time the inexpediency and limited regular use of most unconventional MP tools by the Bank of Russia is systematically argued: QE, UFG in direct form, Direct Credit Easing (DCE), Yield Curve Control (YCC), Qualitative Easing (QuaE), Operation Twist, Negative Interest Rate Policy (NIRP), Helicopter Money. At the same time, the experience of the Bank of Russia and other central banks has proved that it is expedient and even necessary to use tools that are currently being transformed from unconventional to conventional: CFG, Indirect Credit Easing (ICE), verbal interventions and, separately, UFG in indirect form about the intentions to pursue the policy of ensuring price stability (the ultimate target of many central banks). The experience of foreign central banks in developing countries proves that asset purchase programs, if necessary, can be temporary and limited in volume. The limitedness is explained by the fact that the Russian financial market is still characterized by a weak structure and liquidity, smaller volume compared to countries using unconventional MP tools. Inexpediency is explained by high inflation expectations of the population, high inflation, its forecast, absence of the risk of deflation appearance (data and calculations are given), structural liquidity surplus of the banking sector (or absence of stable structural liquidity deficit), potential distortion of pricing of financial instruments in the conditions of underdeveloped financial market and wide space of using conventional MP tools.

Degree of reliability of the research results

The validity of the results is supported by the following aspects.

1. The provisions of economic theory, the current regulatory and legal framework and the experience of foreign communication practice are consistent with the results of the study. The theoretical basis consists of studies of Russian and foreign authors published in the most recognized and prestigious publications, which are emphasized.
2. The work utilizes reliable statistical (including survey, forecast, stock exchange) data from open sources and correctly applies research methods of these data.
3. The results of the research were approved at international conferences and at the presentation to the staff of the Bank of Russia, published in the leading scientific journals on finance and monetary policy.

The Bank of Russia's communications practice is also a reflection of the reliability of the research results.

Relevance of the study to the scientific specialty

The dissertation research corresponds to the scientific specialty 5.2.4. Finance.

Research area: 32. Monetary policy in the Russian Federation and abroad. Criteria and methods for improving the effectiveness of monetary policy.

Testing the research results

The main provisions, results and conclusions of the research were discussed at the international conference of students, graduate students and young scientists "Lomonosov-2023" (Moscow, April 10-21, 2023), at the international conference of students, graduate students and young scientists "Lomonosov-2024" (Moscow, April 12-26, 2024), as well as in a speech to the employees of the Bank of Russia (Moscow, September 12, 2023).

The materials of the study are included in the master's course "Central Banks in the Global Economy". Recommendations based on the results of the study, proposed, among others, in the framework of the Monetary Policy Review, will be implemented in the Bank of Russia's communications practice in the current 2024, and some of them have already been implemented. The results of the study, in particular, the model for assessing the effects of key rate decisions and forecasts of its trajectory on monetary conditions can be used by the Monetary Policy Strategy and Communication Section and the Monetary Policy Tools Development Section of the Monetary Policy Department. The recommendation on the need to increase predictability in decision-making on the key rate in order to reduce volatility in financial markets and increase confidence in MP, as well as a number of recommendations on improving the processes of expectations management and decision-making also have practical application. The scientific and practical components of the research are used in lecturing Bank of Russia employees and can be included in disciplines related to finance, banking and macroeconomics.

The main provisions, conclusions and results of the study are presented in 3 publications of the author in the volume of 4 p.s. (author's volume 4 p.s.). (author's volume of 4 p.s.). All 3 articles were published in journals from the list of peer-reviewed scientific publications recommended for defense in the dissertation council of RANEPA under the President of the Russian Federation on the specialty, including 2 articles in the list of scientific publications included in the international scientific citation database RSCI (2 of them in Scopus and Web of Science) and included in the list of publications approved by the Academic Council of the Academy. All 3 articles are published in the journals that are classified as category 1 (K1) of the VAK under the Ministry of Science and Higher Education of the Russian Federation.

Publications in peer-reviewed scientific publications

1. Abdurakhmanov M. Assessing the predictability of the Bank of Russia decisions on the key rate and informational advantage in its forecasting // *Voprosy Ekonomiki*. – 2024. – Vol. (4). – pp. 70–91. doi: 10.32609/0042-8736-2024-4-70-91

2. Abdurakhmanov M. Key rate as a tool to prevent financial instability based on market expectations // *Finance and Credit*. – 2024. – Vol. 30(2). – pp. 308–331. doi: 10.24891/fe.30.2.308

3. Abdurakhmanov M. Modelling the Effect of Bank of Russia Key Rate Forecasts on Market Participants' Expectations // *Russian Journal of Money and Finance*. – 2023. – Vol. 82(2). – pp. 3–20.

Structure of the dissertation

The dissertation structure includes an introduction, three chapters, conclusion, a list of abbreviations and symbols, a list of literature, which contains 206 titles (including 172 foreign language sources), and 6 appendices. The dissertation research is outlined on 144 pages, contains 12 tables and 20 figures.